

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
NORFOLK DIVISION**

CENTRIPETAL NETWORKS, LLC,)	
)	
Plaintiff,)	No. 2:21-cv-00137-EWH-LRL
)	
vs.)	FILED UNDER SEAL
)	
PALO ALTO NETWORKS, INC.,)	
)	
Defendant.)	
)	
)	
_____)	

**DEFENDANT PALO ALTO NETWORKS, INC.'S MEMORANDUM IN SUPPORT OF
ITS MOTION FOR JUDGMENT AS A MATTER OF LAW PURSUANT TO FED. R.
CIV. P. 50(b)**

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I. INTRODUCTION

Pursuant to Fed. R. Civ. P. 50(b), Palo Alto Networks, Inc. (“PAN”) moves for judgment as a matter of law (“JMOL”) that all asserted claims of the ’903, ’573, and ’797 Patents (collectively, “Correlation Patents”) are directed to patent-ineligible subject matter under 35 U.S.C. § 101, and therefore invalid. PAN also moves for JMOL of no infringement and no damages, as the infringement verdict and damages award are not supported by substantial evidence. *See Konkel v. Bob Evans Farms Inc.*, 165 F.3d 275, 279 (4th Cir. 1999) (JMOL “should be granted” if “substantial evidence does not support the jury’s findings”).

II. ARGUMENT

A. Patent Ineligibility

Patent ineligibility under 35 U.S.C. § 101 “is a question of law” that “*may* contain disputes over underlying facts.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).¹ Under the two-step *Alice* analysis, a court must first determine, as a matter of law, whether the claims are directed to a patent-ineligible concept, such as an abstract idea. *Id.* at 1366. If the court determines the claims are directed to an abstract idea, step two requires consideration of whether the “additional elements” of the claims include an “inventive concept” that “transform[s] ... the claim[s] into a patent-eligible application” of the abstract idea. *Id.* at 1366-68.² Whether a claim includes an inventive concept “is a question of law.” *BSG Tech.*, 899 F.3d at 1290. The asserted claims of the Correlation Patents³ are invalid under § 101 because they are directed to an abstract idea, and the additional elements beyond the abstract idea do not include an “inventive concept”

¹ All emphasis added unless otherwise stated.

² *See Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 217-218 (2014) (step two requires determining “whether the additional elements” beyond the abstract idea “transform the ... claim into a patent-eligible application” of the abstract idea) (internal quotation marks omitted).

³ The asserted claims of the Correlation Patents include claim 10 of the ’903 Patent, claims 1 and 9 of the ’573 Patent, and claims 1, 12, and 17 of the ’797 Patent.

that transforms the claims into a patent-eligible application of that idea.

1. Alice Step One—The Claims Are Directed To The Abstract Idea Of Collecting And Correlating Information, And Generating A Result

The Federal Circuit has long held that “claims focused on ‘collecting information, analyzing it, and displaying certain results of the collection and analysis’ are directed to an abstract idea.” *See, e.g., SAP Am. Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018); *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1351-54 (Fed. Cir. 2016) (collecting cases). The Correlation Patents’ asserted claims are directed to an abstract idea because their focus is collecting and correlating information, and generating a result based on (or in response to) the correlation, rather than any particular technology for performing those functions.⁴ Specifically, the ’797 Patent’s asserted claims recite collecting information about packets received and transmitted by a network device, comparing that information to “correlate” transmitted packets with received packets, and, based on the correlation, generating a rule to identify the source of the packets. *See, e.g., JX-4* at 15:28-49, 16:51-17:8, 17:48-18:18. The ’573 and ’903 Patents’ asserted claims recite the same process, with the only minor differences being that (a) the transmitted packets are “encrypted” (’573 Patent), *JX-5* at 15:25-55, 17:1-34;⁵ (b) the “network device” is a “proxy” (’903 Patent), *JX-3* at 16:50-17:21; and (c) the collected information includes packet receipt and transmission timestamps (’903 Patent), *id.* Thus, the asserted claims of all three patents are focused on collecting and correlating (*i.e.*, analyzing) information and generating a result based on the correlation, which is abstract. *See, e.g., Elec. Power*, 830 F.3d at 1353-54 (collecting cases).

⁴ *See In re Certain Comput. Network Sec. Equip. & Sys., Related Software, Components Thereof, & Prods. Containing Same* (“*Keysight ITC*”), USITC Inv. No. 337-TA-1314, 2023 WL 5744218, at *75 (Aug. 8, 2023) (finding materially indistinguishable claims of related patent are directed to abstract idea of “collecting information, analyzing information, and communicating the results”).

⁵ *See Trial Tr.* at 644:12-645:19 (Centripetal’s expert, Dr. Cole, testifying the claimed process does not differ based on whether packets are encrypted or unencrypted).

That the “information” collected and correlated relates to packets does not render the claims non-abstract because packets are merely a type of information, which is itself inherently abstract. *See, e.g., Bridge & Post, Inc. v. Verizon Commc’ns, Inc.*, 778 F. App’x 882, 889, 892-93 (Fed. Cir. 2019) (generating/embedding alphanumeric string “in an extensible field of a packet” is abstract); *Two-Way Media Ltd. v. Comcast Cable Commc’ns*, 874 F.3d 1329, 1334-35, 1338-39 (Fed. Cir. 2017) (routing/monitoring packets is abstract). Similarly, in the ’573 and ’797 Patents, neither the use of a “rule” to determine whether packets are from a particular host, nor the communication of that rule to a “packet-filtering device” renders the claims non-abstract. *See Sanderling Mgmt. Ltd. v. Snap, Inc.*, 65 F.4th 698, 703 (Fed. Cir. 2023) (employing a “rule that determines when a condition is met” is “an abstract idea”). Accordingly, the claimed collection and correlation of packet-related information and the claimed use of rules are merely abstract ideas.

The results-focused, functional character of the claims further demonstrates they are directed to an abstract idea. The claims recite the functions of generating/determining log entries and correlating packets, and the results of generating a rule or indication identifying the host from which packets are received. *See* JX-4 at 15:28-49, 16:51-17:8, 17:48-18:18; JX-5 at 15:25-55, 17:1-34; JX-3 at 16:50-17:21. The claims do not, however, provide any specific steps or detail as to **how** log entries are determined/generated, “correlation” is achieved through comparison of log entries (or timestamps), or generating a rule or indication identifying the source of packets is accomplished. *Id.*⁶ Claims such as these, which “do no more than describe a function or outcome, without providing any limiting detail” concerning the implementation are “directed to an abstract

⁶ The specification also fails to provide technical detail, instead stating: “the functions and steps described herein may be embodied in computer-usable data or computer-executable instructions,” “the various methods and acts may be operative across one or more computing devices and networks,” and “[t]he functionality may be distributed in any manner or may be located in a single computing device (e.g., a server, client computer, or the like).” JX-4 at 14:45-67, 15:10-14.

idea.” *Affinity Labs of Tex., LLC v. Amazon.com Inc.*, 838 F.3d 1266, 1269-70 (Fed. Cir. 2016).

Centripetal contends the claims are not results-focused because they purportedly include “concrete descriptions on how to protect specific vulnerabilities in a network [by] identify[ing] a specific host that is associated with malicious activity.” ECF No. 883 at 5. But neither the claims nor the specification describes any mechanism to distinguish between a malicious and non-malicious host. Instead, the claims generically recite the result of generating a rule or indication identifying a host from which packets are received, with no technical detail as to how and no distinction between malicious or non-malicious hosts. Indeed, directly contrary to Centripetal’s assertion that there are specific claimed steps for identifying “malicious content,” Centripetal’s counsel asserted at trial that the claim requirements for “malicious content” were so broad that they covered denying content “*for any reason*.” Trial Tr. 991:24-993:15.

Centripetal’s conclusory and generic assertion that the claims “improve computers through enhanced cybersecurity” is likewise unavailing. The purported improvements it identifies—“the ability to identify and block compromised hosts with newly generated rules” and/or “identifying hackers or potential intruders into the network”—are not found in the asserted claims, nor described in the specification. ECF No. 883 at 4-5. As stated above, the claims provide no mechanism to identify compromised hosts, and the specification states that “obfuscation” of information that the claims purport to address “may be done without malice.” JX-4 at 6:12.⁷ Thus, as the ITC found in considering a materially indistinguishable related patent, the asserted claims are wholly unlike instances where courts have upheld claims at *Alice* step one for reciting a patent-eligible computer improvement. *Keysight ITC*, 2023 WL 5744218, at *74-75 (distinguishing cases

⁷ See also *Keysight ITC*, 2023 WL 5744218, at *73 (materially indistinguishable claims of related patent do not recite “anything about ‘cyberthreats’ or protecting against attacks”).

cited by Centripetal to argue a related patent recited a patent-eligible improvement).

Because the Correlation Patents’ asserted claims recite nothing more than “simply compar[ing] information about one packet with information about another packet to determine whether the packets are from the same packet flow” and do not recite any “‘concrete implementation’ for performing the correlation, nor does the specification disclose any ‘concrete implementation’ ... that would explain how the claimed ‘correlation’ is achieved,” the Correlation Patents’ asserted claims are directed to an abstract idea. *Id.* at *73.

2. *Alice Step Two—The Claims Include No Inventive Concept Sufficient To Confer Patent-Eligibility*

The second step of the *Alice* framework considers whether the claims recite an “inventive concept” that is “significantly more” than the abstract idea itself. *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1289-91 (Fed. Cir. 2018). Because an abstract idea “cannot [itself] supply the inventive concept,” the focus must be on the additional elements of the claims “*other than* the [claim’s] use of the [abstract idea].” *Id.* Further, the analysis must “focus on the language of the asserted claims themselves,” as “details from the specification cannot save a claim.” *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1149 (Fed. Cir. 2016).⁸ Here, the Correlation Patents’ asserted claims lack any “inventive concept” beyond the abstract idea itself, which is insufficient to satisfy step two. *See BSG*, 899 F.3d at 1290.

Before trial, the Court contemplated needing to “revisit this issue with the evidence in the record,”⁹ and it should do so now because evidence is in and the jury’s fact findings are not supported by substantial evidence, and thus not determinative of whether claim elements other than the abstract ideas supply an “inventive concept.” Whether considered in isolation or as an

⁸ *See also Intell. Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1322 (Fed. Cir. 2016).

⁹ Hearing Tr. 65:22-25 (Jan. 4, 2024).

ordered combination, none of the “additional elements” of the Correlation Patents’ asserted claims transforms the core abstract ideas into patent-eligible subject matter. As discussed below, the claims and specification unquestionably demonstrate that the elements of the asserted claims *other than the abstract ideas* merely recite conventional computer hardware and/or computer functions. *See, e.g., Berkheimer*, 881 F.3d at 1370 (holding claims lacked an inventive concept because they “amount to no more than performing the abstract idea of parsing and comparing data with conventional computer components”).¹⁰ Thus, the only reasonable conclusion to be drawn from the record is that the Correlation Patents’ asserted claims contain no inventive concept.

In addition, as explained in PAN’s Rule 59 Motion, the jury’s verdict related to *Alice* step two must be “set aside” because the issue of patent eligibility under § 101 is an issue for the Court, not the jury, to decide, and the jury’s verdict is based on “legally erroneous” and prejudicial jury instructions. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018); *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 2011 WL 13114926, at *1 (E.D. Va. Oct. 13, 2011). If the Court does not enter JMOL of patent-ineligibility, it should order a bench trial on the issue, or else order the parties to propose findings of fact and conclusions of law based on the current record, which the Court may then use to develop its own findings and conclusions under Rule 52(a).

a. The Correlation Patents demonstrate that the asserted claims’ additional elements fail to supply an inventive concept

The elements of the Correlation Patents’ asserted claims “*other than*” those reciting the abstract ideas of collecting packet-related information, correlating it to identify the source of the packets, and generating rules based on the correlation fail to supply an inventive concept because

¹⁰ *See also Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1262 (Fed. Cir. 2016) (holding a claim fails at *Alice* step 2 because it “recites the use of generic features . . . as well as routine functions . . . **to implement** the underlying idea”); *Two-Way Media*, 874 F.3d at 1339 (holding a claim “reciting an abstract idea performed on a set of generic computer components . . . [does] ‘not contain an inventive concept’”).

they merely recite implementing the abstract ideas using conventional computer elements, including a “computing system/device,” “processor,” “memory,” “instructions,” “network device,” “host,” “packet-filtering device,” and “network.” *See* JX-4 at 15:28-49, 16:51-17:8, 17:48-18:18; JX-5 at 15:25-55, 17:1-34; JX-3 at 16:50-17:21. That is true whether the additional elements are considered individually or as part of an ordered combination.

The claims do not provide meaningful technical detail concerning the additional computer-related elements. *Id.* And the specification describes them as generic, conventional computer hardware and/or software. *See, e.g.*, JX-4 at 1:48-2:4 (describing “computing system” generically by its functions); *id.* at 2:49-58 (describing “network” as “Local Area Networks (LANs), Wide Area Networks (WANs), Virtual Private Networks (VPNs), ... the Internet, a similar network, or portions thereof”); *id.* at 2:60-66 (describing “[h]osts” as “computing or network devices (e.g., servers, desktop computers, laptop computers, tablet computers, mobile devices, smartphones, routers, gateways, switches, access points, or the like)”); *id.* at 3:2-5 (describing “network devices” as “servers, routers, gateways, switches, access points, or the like”); *id.* at 14:45-53 (describing “instructions” as “program modules,” including “routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types”).¹¹

The claimed rules also cannot provide an inventive concept, as the rule-related claim elements simply recite the result of generating a rule “configured to identify packets received from the first host” with no technical detail as to *how* to generate the rules. *TDE Petroleum Data Sols.*,

¹¹ Jonathan Rogers’ testimony concerning purported use of “specialized” hardware in Centripetal’s products is irrelevant because the asserted claims do not recite any such specialized hardware. *See* Trial Tr. 1755:1-1756:5. David Ahn’s testimony is also untethered to the claims and thus irrelevant. *Id.* at 446:23-447:3 (asserting the “solution for the correlation patents . . . use[s] specialized hardware,” but not identifying “specialized” hardware in the claims or specification). In addition, as stated above, the specification contradicts Mr. Ahn’s conclusory assertion.

Inc., v. AKM Enter., Inc., 657 F. App'x 991, 993 (Fed. Cir. 2016) (claims lack an inventive concept when they provide only the “what” and not the “how” “necessary to turn the abstract idea into a patent-eligible application”). Similarly, the claimed correlation of packets provides nothing inventive, as the correlation is accomplished by the abstract process of comparing log entries, with no other specificity.¹² See *MacroPoint, LLC v. FourKites, Inc.*, No. 1:15 CV 1002, 2015 WL 6870118, at *5 (N.D. Ohio Nov. 6, 2015), *aff'd*, 671 F. App'x 780 (Fed. Cir. 2016) (“[c]orrelating” is non-inventive, as it “simply connotes the ascertaining of a relationship between two pieces of information.”). The claim elements that recite “provision[ing] a packet-filtering device with ... rules” likewise fail to provide an inventive concept because neither the claims nor specification describe “provisioning” as anything other than communicating information. “Such vague, functional descriptions ... are insufficient to transform the abstract idea into a patent-eligible invention.” *In re TLI Commc'ns LLC Pat. Litig.*, 823 F.3d 607, 615 (Fed. Cir. 2016).

The arrangement (or ordered combination) of claim elements also cannot supply an inventive concept, particularly given the specification’s acknowledgement that (a) “[t]he functionality may be distributed in any manner or may be located in a single computing device,” JX-4 at 15:12-13, and (b) the claimed features “may be combined or rearranged in any way possible,” *id.* at 15:23-25. See also *Affinity Labs*, 838 F.3d at 1271-72 (statement in specification that invention was “not limited to any specific configuration” confirmed lack of inventive concept); *Keysight ITC*, 2023 WL 5744218, at *76 (specification confirmed “the claimed invention may be implemented using conventional hardware or entirely in software, *i.e.*, on any generic

¹² JX-4 at 8:54-9:4, 12:1-11 (correlation involves “compar[ing] data” in log entries and determining that data in one entry “corresponds” with data in another); *id.* at 9:32-51 (correlation includes comparing timestamps and performing subtraction to determine “the smallest difference in time indicated by the timestamps”); *id.* at 12:11-22 (correlation includes comparing data from one or more requests in packets transmitted and received by a network device comprising a proxy).

computer”); Trial Tr. 1591:23-1593:17 (Nielson testifying ordered combination is conventional).

Accordingly, the Correlation Patents themselves confirm that no reasonable juror could have found that the elements of the asserted claims *other than the abstract ideas* recite anything more than conventional computer components and/or functions. *See, e.g., Elec. Power*, 830 F.3d at 1355 (no “inventive concept” because “claims, understood in light of the specification, require[] [nothing] other than off-the-shelf, conventional computer, network, and display technology for gathering, sending, and presenting the desired information”).

b. The testimony of both parties’ experts further demonstrates that the additional elements fail to supply an inventive concept

The testimony of both parties’ experts (Dr. Goodrich and Dr. Nielson) also confirms that when elements *other than the claimed abstract ideas* are considered, all that remains are conventional computer devices and functions. *See* Trial Tr. 284:10-290:21 (Goodrich agreeing the recited computer components were “standard” / “commonplace”); Trial Tr. 1575:22-1593:17; *see also* Trial Tr. 1780:18-1781:25.¹³ The Federal Circuit has repeatedly held that claim elements merely reciting the performance of an abstract idea using generic, conventional computer components does not supply an inventive concept. *See, e.g., Two-Way Media*, 874 F.3d at 1339.

Dr. Goodrich’s testimony concerning the asserted claims’ use of a purportedly unconventional “actionable correlation,” Trial Tr. 1767:6-1768:20, 1770:3-14, 1772:9-24, 1773:8-19, is irrelevant to the *Alice* step two inquiry because it improperly focuses on concepts that are either not recited in the claims and/or are abstract ideas. *See, e.g., Symantec*, 838 F.3d at 1321-22 (concepts not recited in the claims cannot provide an inventive concept); *BSG*, 899 F.3d at 1290-

¹³ Dr. Goodrich’s subsequent assertion that the claims require “specialized equipment” is conclusory. He did not identify any “specialized equipment” purportedly recited or required by the claims. *See* Trial Tr. 1768:21-1769:20; *see also Keysight ITC*, 2023 WL 5744218, at *70-74, *79 (rejecting as conclusory and untethered to the claims Dr. Goodrich’s testimony concerning purportedly “specialized” nature of a related patent’s claims).

91 (abstract ideas cannot furnish an inventive concept).¹⁴ In particular, Dr. Goodrich described “actionable correlation” as “giv[ing] the system [the] ability to respond” to the correlation by “identify[ing] a malicious host” and generating rules that can “deal with such malicious activities.” *Id.* 1767:6-16. The Correlation Patents’ asserted claims **do not**, however, provide a way to distinguish a malicious host from a non-malicious host, nor do they recite generating rules to address malicious activities. Rather, the claims generically recite generating an indication of a host from which packets were received or generating a rule to identify packets received from that host. *See* JX-3 at 17:20-21; JX-4 at 15:45-47; JX-5 at 15:49-53.¹⁵ Unclaimed material **cannot** furnish an inventive concept. *See, e.g., Symantec*, 838 F.3d at 1322.

Further, “actionable correlation,” as described by Dr. Goodrich, is nothing more than analyzing information and taking a responsive action, which is itself abstract and thus cannot furnish an inventive concept. *See supra* Section II.A.1; *see also Elec. Power*, 830 F.3d at 1351-52 (holding claims directed to analyzing power-grid data to detect events and, in response, deriving an indicator of power grid vulnerability are abstract); *BSG*, 899 F.3d at 1290-91 (holding abstract ideas cannot furnish an inventive concept). Thus, Dr. Goodrich’s testimony is legally insufficient to support a finding that elements of the claims **other than** the abstract ideas are non-conventional.

B. The Infringement Verdict For The ’903, ’573, and ’797 Patents Is Not Supported By Legally Sufficient Evidence

The evidence of record is legally insufficient to support a finding that PAN infringes any of the Correlation Patents’ asserted claims. For example, Centripetal has failed to show that: (1) the accused technology (*i.e.*, the Automated Correlation Engine (“ACE”)) contained within certain

¹⁴ *See also Keysight ITC*, 2023 WL 5744218, at *70-74, *79 (rejecting as conclusory and untethered to the claims similar testimony from Dr. Goodrich concerning a related patent).

¹⁵ *See also Keysight ITC*, 2023 WL 5744218, at *79 (as to materially indistinguishable claims, finding “specific steps or methods or architecture for combatting network threats, stopping cyber security threats, or the actual security techniques **are not recited in or required by the claim[s]**”).

NGFWs and Cortex XDR) *correlates* the packets received and transmitted by a “network device” (*i.e.*, the NGFW) by performing the *claimed* analysis of specific log entries; (2) “responsive to” or “based on” the correlating, performing the claimed “remedial” steps (*e.g.*, generating or provisioning “*rules*,” or generating an “indication” of “*the first host*”); and (3) with respect to the ’903 patent, “determin[ing] ... differences between at least one packet transmission time indicated by transmission timestamps and at least one packet receipt time indicated by receipt timestamps.”

1. *Overview of Asserted Claims and Purported Infringement Mapping*

Each of the Correlation Patents’ asserted claims recites a computing system/device performing a number of functions/steps, including a “correlat[ing]” limitation that requires correlating packets received by “a” “*network device*” from *a first host* on a first network, and packets transmitted by “the” same “*network device*” to a second host on a second network. JX-3, JX-4, JX-5. The correlating limitation further requires accomplishing the claimed correlating “based on” or “by” comparing “*a first plurality of log entries*” corresponding to packets the network device receives and “*a second plurality of log entries*” corresponding to packets the network device transmits. *Id.* Then, “responsive to” or “based on” the correlating, the apparatus/computing system/computing device performs “remedial” limitations that identify the *first host* and/or generate or provision rules that identify the *first host*. *Id.* The correlating must be “the impetus” for these remedial limitations. ECF No. 452 at 13-15.

As the Correlation Patents explain, *before the claimed process begins*, a security device has detected a packet with a destination address of a known bad actor and desires to identify the sender, known as the “first host.” Trial Tr. 1413:10-1414:20 (citing JX-3 at 13:2-6). Also prior to the security device detecting the packet, a “network device” had performed network address translation (“NAT”), altering the original source or destination addresses that the first host generated. *Id.* 1412:6-25 (citing JX-3 at 7:58-60). The translation or “obfuscation” of the network

addresses is a problem for a security device “*other than [the] network device*” without access to the network device’s NAT information because the security device cannot use the post-NAT source address to identify that first host. *Id.* 1414:14-1415:14 (citing JX-3 at 5:16-22). Therefore, the security device must perform a work-around to detect and re-create the NAT translation and then use that information to discover the pre-NAT source address, thereby identifying the IP address of the first host. Trial Tr. 1415:15-21 (citing JX-3 at 1:58-62). The claimed correlating and remedial steps are that work-around. *Id.* 1418:1-1419:8.

Dr. Cole asserted that a single NGFW is both the “network device” and the source of both the “first plurality of log entries” and “second plurality of log entries.” *Id.* 559:20-562:6; 566:14-567:3; 610:25-611:20.¹⁶ In particular Dr. Cole pointed to fields from a single log reflecting the NGFW’s internal NAT translation table, namely: “pre-NAT” address fields as the “first plurality of log entries” and “post-NAT” address fields as the “second plurality of log entries.” *Id.*; *see also* PX-393 at 568-570 (listing pre- and post-NAT address fields in the same traffic log).¹⁷ Dr. Cole

¹⁶ In his Cortex mappings, Dr. Cole also referenced logs from “hosts” or multiple NGFWs. Trial Tr. 571:4-581:7, 583:18-584:6, 587:9-599:9, 613:10-634:15, 644:12-646:7; PX-364. But he never offered an infringement theory based on logs from those sources. *Id.* He never identified the “network device” in such a configuration, nor explained (a) how any purported “host” or NGFW is arranged relative to any such network device, or (b) how any log entry generated by these sources corresponds to packets received or transmitted by that unnamed network device. *Id.* Thus, references to these alternative log sources cannot support the verdict. Further, at trial and again in post-trial briefing, Centripetal argued that PAN’s noninfringement defenses are tainted by assuming that “a network device” is limited to “one ‘network device.’” Trial Tr. 1470:6-1471:5; ECF No. 843 at 3-4. It is unclear how that dispute is relevant to Centripetal’s infringement mapping as discussed above. Regardless, to the extent Centripetal asserts the article “a” permits it to accuse correlation of packets received by a first network device and packets transmitted by a second network device, Centripetal is wrong as a matter of law. *See Centripetal Networks, LLC v. Cisco Sys., Inc.*, No. 2:18-cv-00094 (EWH), 2023 WL 8586682, at *23 n.16, *27 n.20 (E.D. Va. Dec. 11, 2023) (citing *Convolve, Inc. v. Compaq Comput. Corp.*, 812 F.3d 1313, 1321 (Fed. Cir. 2016)).

¹⁷ Consistent with the description of known prior art NAT functionality in the patents, the PAN NGFW performs Network Address Translation (“NAT”) to translate between source and destination IP addresses used in an internal network to source and destination IP addresses used

pointed to two alternative entities as receiving logs from the NGFW and performing the correlating and remedial limitations: Automated Correlation Engine (“ACE”) contained within certain NGFWs and Cortex XDR. *See, e.g.*, Trial Tr. 525:14-20; 583:18-584:6; 528:17-529:9 (citing PX-393 at 499); 558:17-559:5, 570:13-573:9; 588:19-591:12; 610:25-614:12; 644:12-645:2.

As discussed below, Centripetal and Dr. Cole presented no evidence that either ACE or Cortex XDR performs multiple claim limitations, including the correlating limitations. Instead, he engaged in superficial word matching without referring to any source code or technical documents showing the accused functionality performs the kind of correlation required by the claim language. It is not surprising that Dr. Cole could not show proof of the actual claimed limitations because the claimed inventions are designed to solve a problem—packet obfuscation by a network device—that the accused PAN products do not have. In particular, ACE and Cortex XDR have no need to perform the claimed correlation because they both have direct access to the NGFW’s NAT information and, therefore, have no need for the claimed work-around. *Id.* 1337:7-24; 1415:22-1417:10; 1425:21-1433:24. Indeed, it is undisputed that the NGFW (accused “network device”) provides a single record, such as a traffic log, that includes both pre- and post-NAT fields sitting side-by-side in the record. Trial Tr. 559:20-562:6; PX-393 at 568-570. ACE and Cortex XDR, of course, perform different correlation operations (ACE matching logs to correlation objects, not other logs, and Cortex XDR performing “log stitching” across multiple devices) to achieve different goals, but do not perform the claimed correlation. *Id.* Two named inventors further confirmed that a device with access to the record of the network device’s NAT translation—such as both ACE and Cortex XDR—has no need correlate packets received to packets transmitted. *Id.*

on the Internet. Trial Tr. 1328:15-1331:7, 559:20-562:6. The source and destination IP addresses prior to NAT translation are known as “pre-NAT” addresses, and the source and destination IP addresses after NAT translation are known as “post-NAT” addresses. *Id.*

1368:18 (playing Perry Dep. 34:2-4, 34:6-8), *id.* 1510:13 (playing Geremia Dep. 68:06-13, 68:15-23, 70:25, 71:2-3, 71:5-13, 71:15-18). Thus, it is not surprising that, as discussed below, the Accused Devices do not perform the claimed correlation.

2. *The Accused Devices Do Not Correlate Packets Received By A Network Device And Packets Transmitted By The Network Device Based On Log Entries Of The Packets Received And The Packets Transmitted (All Correlation Patents’ Asserted Claims)*

Centripetal failed to present sufficient evidence that either ACE or Cortex XDR performs the *specific claimed* correlation or does so “based on” or “by”¹⁸ performing a *specific claimed* analysis. There is no evidence that ACE or Cortex XDR “correlate” any packet transmitted by the NGFW (alleged “network device”) with a packet received by the same NGFW “based on” or “by” analyzing the pre-NAT and post-NAT addresses (alleged first and second “plurality of log entries,” which PAN disputes¹⁹). Trial Tr. 571:4-581:7, 587:9-599:9, 610:18-611:7, 613:10-634:15, 644:12-646:7. Indeed, there is no evidence in the record that ACE or Cortex XDR does *any* analysis on these data fields, let alone comparing them to each other as the claims require. *Id.*

Likewise, there is no evidence in the record that either ACE or Cortex XDR then correlates a packet received by the NGFW with a packet transmitted by the same NGFW “based on” or “by” performing that analysis. *Id.* For example, for Cortex XDR, Dr. Cole pointed to a PAN document stating that “Cortex XDR correlates together the firewall network logs.” *Id.* 614:4-12 (citing PX-192 at 13). He then observed that those logs “include both the pre-NAT and post-NAT logs.” *Id.*

¹⁸ Claims 1 and 9 of the ’573 Patent require correlating “based on” the recited analysis of the log entries, while Claim 10 of the ’903 Patent and Claims 1, 12, and 17 of the ’797 Patent require correlating “by” performing the recited analysis of the log entries. JX-3, JX-4, JX-5.

¹⁹ The second plurality of log entries must correspond to packets “transmitted,” which only come into existence upon leaving the network device. Trial Tr. 1411:18-1417:10; JX-3; JX-4; JX-5. The undisputed evidence shows that the NGFW has no ability to log packets once they leave the NGFW. Trial Tr. 1426:2-1427:10; DX-1 at 3, 10. As a matter of logic and the NGFW’s design, it cannot be the source of this second plurality of log entries. *Id.*; *see also* Cisco, 2023 WL 8586682, at *23-24; Trial Tr. 734:12-17.

But those two disparate facts—that “pre-NAT and post-NAT” fields are among countless inputs to Cortex XDR and that Cortex XDR performs some correlation of traffic logs—is not evidence that Cortex XDR performs the specific claimed analysis and correlation, and Dr. Cole provides no explanation why it would. *Id.* 613:10-618:4. The quoted PAN documents say nothing about Cortex XDR performing any analysis of the accused pre- and post-NAT fields nor correlating received and transmitted packets based on any such analysis. *Id.* Having failed to provide any evidence describing the claimed process or explanation why general statements are good enough, Dr. Cole simply concluded “we can check that box.” *Id.*²⁰ Such “general and conclusory testimony” by experts “is not enough to be even substantial evidence in support of a verdict.” *See Whitserve, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 24 (Fed. Cir. 2012).

In its January 13 Memorandum Order, the Court found the same type of evidence—an input, some unspecified analysis, and some unspecified result—insufficient to support infringement regarding a similar claim limitation in the ’380 Patent: “[A]ll Centripetal can establish is that the data transfer request field value (along with other data) is sent to PAN’s machine learning models and advanced detection modules, that some unspecified analysis occurs, and thereafter a ‘verdict’ is returned.” ECF No. 742 at 6. The Court explained “***this is not proof***” that the specific claimed analysis was performed, but “is instead an invitation for ***unwarranted***

²⁰ Dr. Cole did the same for ACE, quoting high-level language in a PAN document that ACE is “an analytical tool that uses logs” and “correlates a series of related threat events that, when combined, indicate a likely compromised host on your network or some other higher conclusion.” *Id.* 528:17-529:9 (citing PX-393 at 499). Dr. Cole added nothing but equally general characterizations such as “this is an analytical tool that correlates those log entries based on the firewall to perform some sort of action.” *Id.* 571:4-24; *see also id.* 558:17-559:5, 570:13-576:25; 588:19-591:12; 644:12-645:2. Having made no link to the claim language, he concluded by agreeing with counsel “[y]es, we can” “check the box.” *Id.* 577:1-2; 591:20; 645:3-4.

speculation.” *Id.*²¹ The same is true here. By pointing only to ACE and Cortex XDR receiving certain data fields along with other fields and performing some unspecified analysis, “Centripetal’s evidence here is plainly insufficient to” support the jury’s findings. *Id.*

3. ***The Accused Devices Do Not Identify The First Host Or Generate Rules “Based On” Or “Responsive To” The Correlating (All Correlation Patents’ Asserted Claims)***

As discussed in Section II.B.1 above, each of the Correlation Patents’ asserted claims requires performing remedial limitations that identify **the first host** (that sent the original packet to the network device), where the recited “correlating” is “**the** impetus” for these remedial limitations. JX-3; JX-4; JX-5; ECF No. 452 at 13-15. Centripetal merely provided conclusory expert testimony that ACE and Cortex XDR, at the conclusion of their analysis, identify *some* unidentified IP address of *some* unidentified device, but Centripetal provided no evidence that ACE and Cortex XDR identify “**the first host**” or that they do so “based on” or “responsive to” correlating the first and second “plurality of log entries,” as required by the Asserted Claims. Trial Tr. 578:7-580:7; 591:21-599:9; 624:5-634:15; PX-393 at 501, 503, 1333; PX-367 at 6; PX-368 at 38-39. These limitations are, again, incompatible with an NGFW that itself performs Network Address Translation. The NGFW itself—not the accused ACE or Cortex XDR—identifies the first host when it originally receives the packet. Trial Tr. 1329:21-1330:24; 1418:8-1432:6. This is *before* any alleged correlating occurs. There is no reason ACE or Cortex XDR would need to “identify” the first host when the NGFW has already provided the identity of the first host in the form of the pre-NAT source IP address and the corresponding post-NAT source IP address. *Id.*

²¹ Although the Court’s summary judgment decision on the ’380 Patent addressed Dr. Mitzenmacher’s analysis, the Court reached a similar conclusion in *Cisco* on “the paucity and indefiniteness of the evidence Dr. Cole relied on” in supporting his infringement conclusion for another member of the Correlation Patent family. *See Cisco*, 2023 WL 8586682, at *27. Consistent with his lack of complete technical opinion, Dr. Cole conceded that his past disclosures of his education credentials were, at best, incomplete. Trial Tr. 691:3-702:12.

Accordingly, Centripetal's allegation that ACE or Cortex XDR are the devices that identify "the first host" "based on" or "responsive to" the required correlation is contrary to the record. *Id.*

4. The Accused Devices Do Not Determine Differences Between Transmission And Received Timestamps ('903 Patent)

Claim 10, the sole asserted claim of the '903 Patent, recites "determin[ing] ... differences between at least one packet transmission time indicated by transmission timestamps and at least one packet receipt time indicated by receipt timestamps." JX-3 at Cl. 10.²² Dr. Cole asserted that the NGFW performs this step because "you have your timestamp and then you're subtracting that from your start time to basically come up with a total elapsed time." Trial Tr. 567:4-570:12. But the claim is not met by determining the differences between *any* two times. JX-3 at Cl. 10. Centripetal provides no evidence—*i.e.*, nothing other than Dr. Cole's bare statement coupled with no analysis, that either the "start time" or "timestamp" is a *transmission* time as required by Claim 10. Trial Tr. 567:4-570:12. Neither the cited PAN technical document nor the cited source code includes any indication that the "elapsed" time calculation involves a *transmission* time in any way. PX-393 at 572 (describing "elapsed time" as "elapsed time of the session" with no mention of transmission time); PX-400 at 170 ln 3143 (describing "elapsed" time calculation with no mention of transmission time). There is no evidentiary support for Dr. Cole's assumption that "elapsed time" involves one transmission time and one reception time. Trial Tr. 1436:15-1439:3. Dr. Villasenor explained that there is no logging of transmission time. *Id.* 1439:10-15. Rather, as is further apparent from Centripetal's cross of Dr. Villasenor, Centripetal asked the jury to find that a difference between any two times, including two separate *receive* times, is sufficient to meet the claim (*id.* 1466:12-1467:6), but the plain language of the claim requires comparing a "*receipt*

²² Likewise, the parties' agreed construction requires "calculat[ing] the amount of time between at least one *packet transmission time indicated by transmission timestamps* and at least one *packet receipt time indicated by receipt timestamps*." ECF No. 369-1.

timestamp” with a “*transmission* timestamp.” Accordingly, the record cannot support a finding that the PAN NGFW performs any calculation involving a “*transmission* timestamp.”

C. The Infringement Verdict For The ’437 Patent Is Not Supported By Legally Sufficient Evidence

The evidence of record is legally insufficient to support a finding that PAN infringes claim 8 of the ’437 Patent. Centripetal failed to show that: (1) the accused LAN switch and switching matrix have anything to do with dropping packets as required by claim 8; (2) the accused “one or more” rules (allegedly the rules within a “security policy” that “Panorama” “pushes” “to the firewalls”) are “to be applied to all network traffic”—because the PAN-OS operating system is designed to remove packets *before* applying accused “security policy” rules; or (3) any of Centripetal’s backup mappings of “one or more” rules meet all claimed properties.

1. Overview of Claim 8 and Purported Infringement Mapping

Claim 8, the sole asserted claim of the ’437 Patent, recites a “system” storing instructions that when executed cause the system to: (1) “provision a packet security gateway” (“PSG”) with “one or more packet filtering rules” meeting a series of properties; and (2) “configure” the PSG to apply the rules to received packets and drop packets matching the rules in a specific way, including by “modify[ing] a switching matrix of a local area network (LAN) switch” “such that the LAN switch is configured to drop the portion of the received packets responsive to the determination by the packet security gateway” to drop a packet matching a rule. JX-2 at Cl. 8.

Centripetal’s expert, Dr. Mitzenmacher, asserted that Panorama, a management device used to enable a customer to manage multiple firewalls (Trial Tr. 1376:11-20), performs the claimed “provisioning” by “push[ing]” a “security policy” (which is a collection of user-defined rules) to a PAN NGFW (*id.* 921:14-21). He asserted that various portions of the PAN NGFW meet the other claimed functionality. First, to meet the limitation that the PSG be configured to receive

packets “via a communication interface that *does not have a network-layer address*,” he pointed to the NGFW’s Layer 2 mode, rather than the more common Layer 3 mode that does use a network layer address. Trial Tr. 934:13-936:11.²³ Next, he pointed to a processor in the Network Processing Card (“Network Card”) of the NGFW as “checking the policy to determine should this packet continue or should it not.” *Id.* 953:4-7. Finally, he pointed to the Switch Management Card (“Switch Card”) as the claimed “LAN switch” and “Switching Infrastructure” contained in the Switch Card as the claimed “switching matrix.” Trial Tr. 950:22-951:15.

2. The Accused Products Do Not Modify A Switching Matrix Such That The LAN Switch Is Configured To Drop Packets

Claim 8 requires: (a) a PSG to make “a determination” that a received packet matches one of the provisioned rules, and (b) in the last limitation, “responsive to the determination,” the PSG must “modify *a switching matrix* of a local area network (LAN)” “such that *the LAN switch is configured to drop* the portion of the received packets.” JX-2 at Cl. 8. Thus, the PSG *does not* drop the packet, but instead enlists two other distinct elements to do so. No reasonable juror could find the PAN NGFW meets this limitation because it is undisputed that a single component (the alleged PSG) both determines a rule match and allows the matched packet to be overwritten in memory such that it vanishes with *no further action—let alone modifying any switching matrix*. Trial Tr. 1399:25-1401:18 (Villasenor), 1004:2-1006:13 (Mitzenmacher); PX-400 at 374-75 lns 801-807 (source code). The separate component that Dr. Mitzenmacher alleged was the LAN switch cannot meet the claim because its only involvement is *before*, not “*responsive to*” and therefore after, the dropping determination. Trial Tr. 1402:10-1408:9 (Villasenor); 953:24-954:3 (Mitzenmacher).

²³ The PAN NGFW supports both Layer 2 and Layer 3 (layers in the OSI model) modes, where Layer 2 mode enables more connectivity but provides less security. Trial Tr. 1307:5-1309:17.

The undisputed manner in which the PAN NGFW drops packets does not meet the requirements of claim 8. Trial Tr. 1399:25-1401:18. When a processor in the Network Card determines a packet matches a rule, that very same processor drops the packet. *Id.* 1399:25-1401:18, 1004:2-1006:13; PX-400 at 374-75 lns 801-807. It does so not by asking for help or transferring the packet in any way—it simply marks the memory location containing the packet “free,” thereby “allowing the packet to be overwritten.” *Id.* Dr. Mitzenmacher offered no evidence or analysis as to how the admitted act of dropping by just “sit[ting] here” (*id.* 1016:14-1017:5) meets the specific “modify” limitation. On cross examination, when asked to agree that this inaction was not modifying a switching matrix such that a LAN switch is configured to drop packets, Dr. Mitzenmacher offered only conclusory retorts: “I disagree” and “of course, it is.” *Id.* 1004:2-13. Dr. Mitzenmacher’s conclusory assertion that marking a location in memory as “free” could be considered “*a* modification” of a switching matrix is insufficient. Claim 8 is not met by *any* modification—it requires that the modification cause the LAN switch to be “configured to drop” packets. JX-2 at Cl. 8. Here, Dr. Mitzenmacher testified this purported modification does not cause any action by the LAN switch at all: “eventually, because you’re just sitting in memory, eventually someone else will come in and write over that memory.” Trial Tr. 1016:14-1017:5. No reasonable juror could find that this inaction meets the LAN-switching requirements of claim 8.

Further, no reasonable juror could identify any functionality of the Switch Card (the alleged LAN switch) as being configured to drop packets “responsive to” a determination. Trial Tr. 1402:10-1408:9. Dr. Mitzenmacher spent his direct examination explaining how the Switch Card routes packets to the processor in the network card to make a drop determination. *Id.* 953:24-954:3. This functionality, occurring *before* a drop determination is even made cannot, as a matter of law, have any relevance to being configured to drop packets “responsive to,” and therefore *after*, a drop

determination. JX-2 at Cl. 8. Further, Dr. Mitzenmacher confirmed that the packet never makes it back to the Switch Card *after* the drop determination: “[Y]ou’re going to sit here” *at the processor in the Network Card* “and not get forwarded out until – and, eventually, because you’re just sitting in memory, eventually someone else will come in and write over that memory.” Trial Tr. 1016:14-1017:5 (“this whole path that we showed” routing packets through the Switch Card “that went back through to get to the egress”—“[y]ou’re not following that path anymore”). It is, thus, not possible for the Switch Card (the alleged LAN switch) to be configured to drop packets “responsive to” a determination as Claim 8 requires because it never even receives packets after a drop determination is made. *Id.* 1402:10-1403:5.

In its January 31 JMOL motion, Centripetal did not attempt to defend Dr. Mitzenmacher’s opinion that the Switch Card could be the claimed LAN switch, but instead falsely asserted that Dr. Mitzenmacher had actually mapped the LAN switch to the *entire* “NGFW.” ECF No. 843 at 12. This misstates Dr. Mitzenmacher’s testimony; he was clear that he was mapping the LAN switch to “switch management cards” and the “switching matrix” to “switching infrastructure.” Trial Tr. 950:22-951:15.²⁴ Regardless, Centripetal did not offer a coherent theory for such a mapping. Claim 8, and the parties’ agreed construction, requires a *PSG*, a *switching matrix* “contained within” a LAN switch, and the *LAN switch* be “associated with” the PSG. JX-2 at Cl. 8; ECF No. 369-1. It further requires the PSG modify the switching matrix to, in turn, cause the LAN switch to be configured to drop packets. JX-2 at Cl. 8. The plain language, thus, describes three distinct components having relationships with and interacting with each other. *Id.* See *Becton*,

²⁴ “Q. ... [H]ow does this inform your opinion as to whether the firewalls contain the *LAN switch*? A. Again, *it’s talking about switch management cards*.” “Q. ... How does this inform your opinion as to whether the firewall contains this *switching matrix*? A. Right. So you can see back plane is sort of like where the information is coming from, and then if you look on the bottom, you can see it says, like, *switching infrastructure*”

Dickinson and Co. v. Tyco Healthcare Group, LP, 616 F.3d 1249, 1254 (Fed. Cir. 2010). Nothing in the record, including Dr. Mitzenmacher’s testimony, addresses any such interaction under this new theory. *See, e.g.*, Trial Tr. 950:22-951:15.

3. The Accused Products Do Not Meet the Requirements For “One Or More Packet Filtering Rules”

Claim 8 requires the recited “one or more rules” to meet multiple properties: (1) each be provisioned onto a PSG by the system (the accused Panorama), (2) “to be applied to all network traffic traversing the boundary,” *and* (3) each must comprise at least one packet matching criterion associated with malicious network traffic. *Id.* Centripetal was required to point to the same “one or more” rules to meet all requirements. *See Salazar v. AT&T Mobility LLC*, 64 F.4th 1311, 1317 (Fed. Cir. 2023) (“while the claim term ‘a microprocessor’ does not require there be only one microprocessor, the subsequent limitations referring back to ‘said microprocessor’ require that at least one microprocessor be capable of performing each of the claimed functions.”); *In re Varma*, 816 F.3d 1352, 1363 (Fed. Cir. 2016) (“For a dog owner to have ‘a dog that rolls over and fetches sticks,’ it does not suffice that he have two dogs, each able to perform just one of the tasks.”).

a. “One or more rules” “to be applied to all network traffic traversing the boundary”

There is no evidence that any provisioned security policy (the alleged “one or more” rules) is to be applied to all network traffic traversing the boundary. Instead, the evidence presented at trial showed that in the accused Layer 2 mode the “**Ingress process error**” and “**FW [firewall] inspection applicable**” functions (collectively “PAN-OS Functions”) remove packets that traverse the boundary from the processing queue *before* applying provisioned “security policy” rules. Trial Tr. 1389:5-1390:10, 1394:3-24, 979:2-21, 1303:18-1304:1, 1036:8-13; DX-1 at 2, 3, 5; DX-286 (high-resolution image of diagram in DX-1); PX-400 at 345 lns 4284-4288, 317 lns 670-676. Accordingly, the “security policy” rules necessarily are *not* to be applied to those

removed packets—directly contrary to the claim requirement that the alleged “one or more” rules must be “to be applied to all network traffic traversing the boundary.” *Id.*

First, Dr. Mitzenmacher’s only response to the “**Ingress process error**” function’s removal of packets from the queue was to argue that these removed packets are not part of the recited “all traffic” because they do “not traverse the network boundary.” Trial Tr. 976:24-977:19. This position is contrary to the plain language of claim 8, which recites that the PSG (*i.e.*, the NGFW) first “receive[s] ... **network traffic traversing the boundary**” that “comprises **received packets**” and then “drop[s] the portion of **the received packets**.” JX-2 at Cl. 8. “**The** received packets” that are dropped refers, by antecedent basis, to the packets already defined as traversing the boundary. *Id.* Therefore, according to claim 8, packets received at the NGFW and then dropped **do** traverse the boundary—and their removal prior to application of the security policy violates claim 8.

Second, Dr. Mitzenmacher offered no explanation or evidence of how the “**FW inspection applicable**” function causing categories of packets labeled “forward only” to bypass application of the “security policy” rules could be reconciled with claim 8. Rather, he speculated “this **could** apply to packets that are just going internally to another part of the local network” and thus not be part of traffic traversing the boundary. Trial Tr. 979:13-21. Such speculation is not sufficient. Dr. Mitzenmacher also argued that PAN allegedly had not “shown there are any packets that would cross a network boundary.” *Id.* 988:13-15. This is an improper attempt to shift the burden of proving infringement and is wrong in view of Mr. Zuk and Dr. Villasenor’s subsequent testimony. *Id.* 1315:23-1316:11, 1318:5-1322:23, 1396:4-1398:14.²⁵ Dr. Mitzenmacher also conceded “there

²⁵ Mr. Zuk and Dr. Villasenor provided specific examples and explanations that the “forward only” categories listed in DX-1 do, indeed, relate to traffic going from inside to outside a network. Trial Tr. 1315:23-1316:11, 1318:5-1322:23, 1396:4-1398:14. Mr. Zuk describes that non-IP means non-Internet protocol, which includes “more than 65,000 other protocols,” including AppleTalk and DECnet that **include** traffic going from external to internal networks. *Id.* 1322:8-19.

can be non-IP packet[s]”—one of the “forward only” categories—“that cross boundaries.” *Id.* 1015:19-1016:1. Even though he qualified this concession with “but then they are subject to rules,” he failed to identify any such rule relevant to the claim (*id.*), which is insufficient to avoid JMOL.

Absent an evidence-based response from Dr. Mitzenmacher, Centripetal turned to attorney argument that its own expert did not support. First, Centripetal’s attorneys argued that DX-1 was not reliable as relevant only to earlier versions of PAN-OS. Trial Tr. 715:13-22, 1503:15-22. But Dr. Mitzenmacher directly contradicted this argument by relying on DX-1 as describing the functionality of the accused later versions. *Id.* 939:21-940:18. Mr. Zuk and Dr. Villasenor also each confirmed that it accurately described the relevant versions of PAN-OS. *Id.* 1301:23-1302:13, 1508:16-1509:4. They also described the relevant functionality independent of DX-1. *Id.* Second, Centripetal’s attorneys argued that DX-1 could not be accurate because it would create “a big hole in the firewall” and couldn’t exist because of “hackers.” *Id.* 1012:17-19, 1501:25-1503:14. Again, the record evidence from Mr. Zuk and Dr. Villasenor belies this attorney argument, as they provided uncontradicted testimony that not applying provisioned rules to some categories of traffic was expected behavior *in Layer 2 mode* (the accused mode at issue) *Id.* 1316:1-1318:4, 1501:25-1503:14. Finally, Centripetal’s counsel pointed to statements in PAN documents that the NGFW “inspects all traffic.” *Id.* 1893:15-23. But claim 8 requires much more than inspecting all traffic in some way. It requires applying *provisioned* rules to all traffic in Layer 2 mode, and there is no evidence that this is done in Layer 2 Mode. *Id.* 1316:1-1318:4, 1501:25-1503:14.

b. Failure to consistently map all “one or more” rules requirements

Each time Dr. Mitzenmacher was faced with a challenge to his mapping, he responded with a shifting sands approach, whereby he added to his mapping of the alleged “one or more” rules in an effort evade the evidence that contradicted his assertions. First, in response to PAN’s evidence

(discussed in Section II.C.3.a above) that the PAN-OS Functions remove packets from the processing queue *before* applying provisioned “security policy” rules and, thus, the mapped “security policy” rules are not “to be applied to all network traffic,” Dr. Mitzenmacher sought to save his mapping by arguing that “the ‘[firewall] inspection applicable’ is, itself, a security rule.” Trial Tr. 979:13-21, 1012:24-1014:2. But no reasonable jury could find the PAN-OS functions are provisioned. It is undisputed that the PAN-OS Functions are part of the operating system that lives on the NGFW (*id.* 983:9-23) and do not reach the firewall via Panorama “push[ing] down” the accused “security policy,” which is what Dr. Mitzenmacher opined qualifies as “provisioning” (*id.* 921:14-21). Dr. Mitzenmacher also defined “provisioning” as “giving information, in particular, rules to a packet security gateway,” which does not match simply being part of the original operating system. *Id.* 890:4-8. Likewise, no reasonable jury could find either PAN-OS Function includes matching criteria associated with malicious network traffic. The “**FW inspection applicable**” function forwards, not blocks, packets meeting its matching criteria of types of traffic. *Id.* 1323:1-6, 1394:19-24. The “**Ingress process error**” function targets inadvertent transmission errors without regard for whether the underlying traffic was malicious or benign. *Id.* 1303:20-1304:1, 1304:25-1305:1, 1384:17-19.

Second, when challenged that rules in the mapped security policy include rules designed to target conduct such as time wasting rather than malicious network traffic, Dr. Mitzenmacher argued that the plain meaning of “malicious network traffic” included “traffic that a person running the system wants to deny *generally for any reason*.” Trial Tr. 991:24-993:15. Centripetal’s counsel doubled-down on this point during closing, arguing “the administrator gets to choose

what’s malicious and what’s not malicious. That’s the beauty of it.” *Id.* 1972:1-15.²⁶ Yet, perhaps aware of the untenability of his position, Dr. Mitzenmacher shifted and argued that at least *some* of the rules in the security policy “block[] things that are known threats.” Trial Tr. 997:6-9; 998:2-11, 1011:6-1012:8. By shifting positions on what was included in the security policy, Dr. Mitzenmacher ignored the other properties that must be met, most notably that the rules are “to be applied to all network traffic traversing the boundary.” JX-2 at Cl. 8. At summary judgment, Centripetal urged it could point collectively at all rules in the mapped “one or more” rules (ECF No. 515 at 10), and the Court, over PAN’s objection, accepted that argument, holding “the claim is satisfied so long as all network traffic is subject to at least one of the packet filtering rules” (ECF No. 702 at 5). Centripetal never, at summary judgment or at trial, offered any evidence that a *subset* of rules in the security policy are to be applied to all network traffic.

D. The Jury’s Damages Award Is Not Supported By Legally Sufficient Evidence

PAN is separately entitled to JMOL of no damages because the jury’s \$151.5 million award is not supported by substantial evidence. *See TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1291-92 (Fed. Cir. 2020) (affirming grant of JMOL that reduced damages award to zero because “damages award was not supported”). Centripetal failed to carry its burden of establishing a reasonable royalty

²⁶ No reasonable jury could find the plain and ordinary meaning of “malicious network traffic” includes content an administrator wants to deny for any reason. *Compare to id.* 1380:21-1381:5 (plain meaning is “can be harmful” to the network), 1305:2-9 (plain meaning is “something that is bad” for the network including “viruses and spyware and other kinds of malware”). Centripetal’s trial argument contradicts its claim construction position where Dr. Goodrich submitted a declaration asserting “malicious network traffic is network traffic that may be harmful.” ECF No. 361 ¶ 37. The Court favorably cited that testimony and other definitions of “can cause harm to a computer or compromise data stored on a computer.” ECF 452 at 21. Because no reasonable jury could find the plain and ordinary meaning of “malicious network traffic” includes traffic being denied for “any reason,” PAN is entitled to JMOL. *See Eon Corp. IP Holdings LLC v. Silver Spring Networks, Inc.*, 815 F.3d 1314, 1320 (Fed. Cir. 2016). At the very least, as PAN points out in its Rule 59 motion, a new trial before a jury properly-instructed as to the term’s meaning is needed.

in two ways, each of which independently warrants JMOL of no damages.²⁷ First, Centripetal's damages model rests on a single litigation settlement agreement (the Keysight Settlement),²⁸ which Centripetal failed to demonstrate is sufficiently comparable to serve as the sole support for a reasonable royalty. Second, Centripetal failed to present evidence apportioning the value of the patented inventions from the numerous unpatented features of the Accused Products.

1. Centripetal Failed To Carry Its Burden To Demonstrate The Keysight Settlement Is Sufficiently Comparable To Support A Reasonable Royalty

To support a reasonable royalty, prior licenses “need to be sufficiently comparable for evidentiary purposes and any differences in circumstances must be soundly accounted for.” *MLC Intell. Prop., LLC v. Micron Tech., Inc.*, 10 F.4th 1358, 1375 (Fed. Cir. 2021) (internal quotation marks omitted).²⁹ And because litigation settlements are generally unreliable measures of a reasonable royalty, the Federal Circuit has permitted consideration of such licenses only where they are the most reliable evidence of a reasonable royalty. *See LaserDynamics, Inc. v. Quanta Comput., Inc.*, 694 F.3d 51, 77, 79 (Fed. Cir. 2012). The evidence presented at trial, however, cannot support such a finding here.³⁰

First, Mr. Malackowski agreed that the Keysight Settlement was executed under vastly different circumstances than those assumed in the hypothetical negotiation framework used to

²⁷ *Id.*; see also *Promega Corp. v. Life Techs. Corp.*, 875 F.3d 651, 666 (Fed. Cir. 2017) (plaintiff “may waive its right to a damages award” by pursuing “an ultimately invalid damages theory”).

²⁸ Trial Tr. 1167:18-21 (Malackowski agreeing damages model rests on Centripetal's 2018 settlement agreement with Keysight Technologies, Inc.).

²⁹ See *Biedermann Techs. GmbH & Co. KG v. K2M, Inc.*, No. 2:18-cv-585, 2021 WL 6034269, at *9 (E.D. Va. Dec. 10, 2021) (“settlement licenses may be used at trial in limited circumstances and when sufficiently comparable, [but] the window for admission narrows as the circumstances diverge from the hypothetical negotiation and an expert fails to address such differences.”).

³⁰ This is particularly true in view of the numerous comparable and more reliable agreements PAN presented at trial, but which Centripetal rejected with respect to its proffered royalty. See Trial Tr. at 1602:21-1613:25 (Nielson testifying as to technical comparability of numerous PAN and Centripetal patent purchase/license agreements); see *id.* 1680:8-1693:2 (Bakewell testifying as to economic comparability of those agreements).

determine a reasonable royalty here because it was negotiated in the middle of trial (as opposed to a negotiation by willing parties) and was intended to settle infringement claims involving different patents than those asserted here. Trial Tr. 1168:5-1169:17, 1190:9-15.

Second, both parties' experts acknowledged the Keysight Settlement contained fundamentally different terms than the hypothetical Centripetal-PAN license because it was a portfolio license that included [REDACTED], whereas the Centripetal-PAN license, in accordance with the jury's verdict, is limited to the four Asserted Patents and includes no assurance that Centripetal will not later assert infringement of other Centripetal patents. Trial Tr. 1171:11-1172:13, 1173:3-1181:23; 1198:2-1201:24; *see Apple Inc. v. Wi-LAN Inc.*, 25 F.4th 960, 973-74 (Fed. Cir. 2022) (expert's failure to address differences in scope of the prior license "is troubling and makes his opinion unreliable").

Third, the Keysight Settlement involved fundamentally different products and markets than PAN's accused products. Trial Tr. 1669:3-25, 1672:8-1677:6, 1453:20-1456:14. Fourth, the Keysight Settlement required royalty payments as to only a subset of the licensed products, included floor and ceiling thresholds, and was limited to a three-year term, all of which limited the overall amount paid using the rates in the agreement. *Id.* 1165:11-18, 1183:9-1185:3, 1672:11-15.

Centripetal failed to present evidence accounting for these differences between the Keysight Settlement and the hypothetical Centripetal-PAN license. As a result, no reasonable jury could have found the Keysight Settlement sufficiently comparable to serve as the sole support for a reasonable royalty in this case. *See Biedermann*, 2021 WL 6034269, at *9. For that reason alone, PAN is entitled to JMOL of no damages.

2. Centripetal Failed To Apportion, And Thus Failed To Establish A Reasonable Royalty That Reflects The Value Of The Claimed Inventions

"A patentee is only entitled to a reasonable royalty attributable to the infringing features."

Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc., 904 F.3d 965, 977 (Fed. Cir. 2018). “[W]here an infringing product is a multi-component product with patented and unpatented components, apportionment is required.” *Mentor Graphics Corp. v. EVE-USA, Inc.*, 870 F.3d 1298, 1299 (Fed. Cir. 2017) (Stoll, J., concurring) (citing *VirnetX*, 767 F.3d at 1326).³¹ Although Centripetal conceded the Accused Products include “hundreds of features,” many of which are indisputably not part of the claimed inventions, Trial Tr. 751:2-4, 1132:3-8,³² Mr. Malackowski, made no effort to identify the value of the patented features apart from the unpatented features, and instead asserted apportionment was built-in to the Keysight Settlement. *Id.* 1128:17-1129:23; 1233:10-19. Reliance on “built-in” apportionment is appropriate *only* in circumstances where there is (1) complete identity of parties, patents, and accused technology, or (2) a reliable analysis of the differences between the licensed technology and the accused technology. *See MLC*, 10 F.4th at 1375; *see also Biedermann*, 2021 WL 6034269, at *16-19.

Those are not the circumstances here. Rather, the testimony of both parties’ witnesses establishes that the Keysight Settlement involved different parties, patents, and accused products; thus, any “built-in” apportionment was specific to Keysight’s accused products. *See* Trial Tr. 1196:11-13, 1190:9-15, 748:16-751:21, 1672:8-1677:6, 1453:20-1456:14, 1345:9-21. And Centripetal did not present a reliable analysis of the differences between Keysight’s products and PAN’s accused products. Instead, Mr. Malackowski testified merely that the Keysight Settlement’s

³¹ *See also Limelight Networks, Inc. v. XO Commc’ns, LLC*, No. 3:15-cv-720, 2018 WL 678245, *4 (E.D. Va. Feb. 2, 2018) (excluding expert’s opinions based on “fail[ure] to determine the appropriate base of [Defendant’s] revenues attributable to the [asserted] patent”).

³² *See also* Trial Tr. 1325:20-1327:9 (Zuk testimony that accused features represent “one or two” “out of more than a thousand” in PAN’s NGFWs); *id.* 1327:23-1328:14 (Zuk testimony that “less than 1 percent” of the features of the Panorama-NGFW combination are accused features); *id.* 1455:20-1456:14 (Villasenor testimony that there are “many more unaccused features than accused features”); *id.* 1704:23-1707:11 (Bakewell testifying similarly); DX-36; DX-31; Trial Tr. 1593:21-1602:18 (Nielson testimony as to limited incremental value of the Asserted Patents).

royalty rate was already apportioned because it had been “reduced [] by 40 percent to account *for the old technologies*.” *Id.* 1129:17-20. But that reduction does not account for any of the differences discussed above, and Centripetal offered no evidence that reduction accounts for the hundreds of unpatented features in PAN’s accused products, which greatly outnumber those of Keysight’s products. *Id.* 1455:12-19, 1508:1-5 (Villasenor testifying PAN’s accused products include many more features than the Keysight products); *id.* 1704:25-1706:5 (Bakewell testifying same). Indeed, Centripetal’s infringement expert, Dr. Cole—on whose testimony Mr. Malackowski relied to compare the Keysight and PAN Accused Products—conceded he *did not* perform any technical analysis concerning the proportion of accused to unaccused features in *either* the Keysight or PAN products. Trial Tr. 750:23-751:21; 1190:16-22. In addition, the purported apportionment of the Keysight Settlement was specific to the asserted patents in that case, and the record is devoid of any attempt to tie those patents to the four patents asserted here.

Given this missing foundation, there is no legally sufficient evidentiary basis from which the jury could determine a reasonable royalty that reflects the incremental value of the patented inventions. *Biedermann Techs.*, 2021 WL 6034269, at *19; *Limelight*, 2018 WL 678245, at *4. As a result, no reasonable jury could have found that Centripetal carried its burden, and PAN is entitled to JMOL of no damages.

Dated: February 28, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on February 28, 2024, I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system, which will automatically send notification of electronic filing to all counsel of record.

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